

## NORTH PACIFIC OCEAN

By WILLIS E. HURD

During February the average position of the Aleutian cyclone lay between the northwestern portion of the Gulf of Alaska and the waters to the south of Kamchatka, with the central area west of the Alaskan Peninsula, lowest monthly pressure given, 29.42 inches, at Dutch Harbor. On the 17th the great region of low pressure expanded eastward until it covered the whole upper part of the Gulf of Alaska, where it affected the weather until the close of the month. On two occasions early in February, during the 3d and 4th and on the 9th and 10th, the cyclone became unusually expanded southward and centrally intensified, covering an enormous area in upper and middle latitudes, and with local pressures below 28 inches. The lowest recorded barometer, 27.84 inches, occurred on the 4th and was read on board the steamship *Empress of Asia* in 46° 58' N., 170° 12' E. An almost equally low reading, 27.95 inches, was recorded by the steamship *Reiyo Maru* in 54° 35' N., 172° 05' W., on the 9th.

The Pacific-California anticyclone was generally well developed and covered its usual area, except for a few days, principally early in the month, when intruding low pressures, north and east, restricted its region of activity.

Anticyclones prevailed the greater part of the month off the China coast, causing strong monsoon winds on several days. Frequent cyclones, mostly small and of a moderate nature, occurred in the neighborhood of Japan.

Pressure data for several island and mainland coast stations in west longitudes are given in the following table:

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, February, 1929

Stations	Average pressure	Departure from normal	High-est	Date	Low-est	Date
	Inches	Inch	Inches		Inches	
Point Barrow <sup>1</sup>	30.22	-----	30.68	20th <sup>5</sup>	29.80	10th.
Dutch Harbor <sup>1,2</sup>	29.42	-0.20	30.06	18th	28.54	5th.
St. Paul <sup>1,2</sup>	29.54	-0.12	30.24	19th	28.58	6th.
Kodiak <sup>1</sup>	29.74	+0.04	30.26	13th	28.66	23d.
Midway Island <sup>1,2</sup>	29.96	-0.07	30.18	18th	29.68	8th.
Honolulu <sup>2</sup>	30.01	-0.04	30.13	1st	29.83	11th.
Juneau <sup>2</sup>	30.10	+0.18	30.59	10th	29.30	19th.
Tatoosh Island <sup>3,4</sup>	30.20	+0.22	30.46	10th	29.67	1st.
San Francisco <sup>2,4</sup>	30.11	+0.04	30.35	10th	29.75	6th.
San Diego <sup>2,4</sup>	30.07	+0.03	30.26	10th	29.76	6th.

<sup>1</sup> P. m. observations only.

<sup>2</sup> 1 day missing.

<sup>3</sup> A. m. and p. m. observations

<sup>4</sup> Corrected to 24-hour mean.

<sup>5</sup> And on 21st.

Gales occurred somewhere over upper and middle sections of the ocean on almost every day of February,

except in the region dominated by the Pacific-California anticyclone, where they were largely confined to a restricted region west of the middle California coast on the 2d and 3d. In addition, a moderate gale was encountered northeast of Hawaii on the 21st. The northern and middle latitude western areas were somewhat stormier than in January, and whole gales to full storm winds were rather frequent. Forces of 11 occurred on the 4th near 47° N., 170° E.; on the 9th, 10th, 11th, and 14th both north and south of the central and eastern Aleutian Islands; and on the 10th, 11th, 13th, and 19th between Japan and 160° E., 30° and 40° N. On the 13th a full hurricane velocity, the only one yet reported for February, was experienced in 37° N., 155° E. Gales in east longitudes occurred on several days in as low a latitude as the 25th parallel. High winds were reported in the Japan Sea on the 2d and 10th, although conditions show they occurred there also on other dates, and in or near Yokohama Harbor on the 12th and 13th. For the Japanese coast as a whole the stormiest days seem to have been the 2d, 3d, 13th, 19th, 24th, and 25th, the gales being due in part to the passage of active cyclones, but largely to the steep pressure gradients at times existing between the upper Asiatic coast and the western extension of the Aleutian cyclone. Snow was frequent over the waters of the archipelago, and heavy snow, hail, and sleet squalls were often encountered between northern Japan and the Aleutian Islands.

The prevailing wind at Honolulu was from the east; the highest wind velocity was at the rate of 25 miles an hour from the east on the 17th.

A violent norther was experienced in the Gulf of Tehuantepec on the 11th. The gale reported was from NNE., force 10, and resulted from a strong flow of air over the isthmus from an anticyclone of some magnitude central that day over Texas.

Winter fog conditions prevailed, with little change in locality and general percentage of occurrence from those of the previous December and January. Fog formed in the North China Sea and the Gulf of Tonkin on the 22d; otherwise, in east longitudes no fog was reported except along the upper route near mid-ocean, where it was observed on the last few days of the month. Most frequent fog was found along the upper and middle steamer routes between longitudes 140° and 170° W., with the region of maximum formation, 30 to 40 per cent of the days, near 50° N., 145° to 160° W. It was reported on a few days off the Washington coast and near Cape San Lucas, but for the most part the American coast seems to have been unusually free from fog this month.